REMARKS

The Applicant appreciates the thoroughness with which the subject application has been examined. By this amendment, changes have been made in the certain claims as set forth above to overcome the Examiner's rejections and objections and more concisely claim and describe the present invention. Claims 1-21 remain in the application for reconsideration by the Examiner. The Examiner's allowance of all pending claims is earnestly solicited.

MATTERS RELATED TO THE CLAIMS

Within the first claim set, claims 1-3, and 5 have been rejected under Section 102(b) as anticipated by Iyer (6,433,404), claims 6 and 7 have been rejected under Section 103(a) as unpatentable over Iyer and claims 4 and 8 have been rejected under Section 103(a) over Iyer further in view of Wang (6,703,263).

To further define the invention over the cited prior art, the Applicant has amended claim 1 as set forth above in the marked-up version of the claim. In particular, the Applicant has amended the claim to include, "a first substantially linear material layer having a first sheet resistance and defining first and second terminals at opposing ends thereof; a second material layer coextensive with and overlying the first material layer, the second material layer having a second sheet resistance less than the first sheet resistance." Support for this amendment can be found in paragraphs [0030] through [0032] and Figures 2 and 4 of the specification.

Iyer discloses a fuse having "an intersection between cathode 104 and fuse link 106 [where] a well-defined delineation of materials is provided." See column 4, lines 2 and 3 and the interface 107 illustrated in Figure 6. Further, "the cathode 104 [is] formed from a single material . . . and fuse link 106 [is] formed from a layer of polysilicon material 112 . . . having a silicided layer 114 formed thereon." See column 4 beginning at line 14. Thus the rejection of claim 1 over Iyer is overcome, as he does not disclose at least, "a second material layer coextensive with and overlying the first material layer, the second material layer having a second sheet resistance less than the first sheet resistance."

Further, it is respectfully submitted that there is no disclosure in Iyer that would render the Applicant's invention as set forth in amended claim 1 obvious under Section 103(a), since

Iyer discloses, "the cathode 104 [is] formed from a single material . . . and fuse link 106 [is] formed from a layer of polysilicon material 112 . . . having a silicided layer 114 formed thereon."

As to rejected dependent claims 2, 3 and 5, the Applicant contends that each of these claims, depending from amended claim 1, includes one or more elements that further distinguish the invention over the art of record. These claims should therefore be in condition for allowance. Claim 5 has been amended to comport with the amendments to claim 1 from which it depends.

As to rejected claims 4 and 8, the Applicant contends that each of these claims, depending from amended claim 1, includes one or more elements that further distinguish the invention over the art of record. These claims should therefore be in condition for allowance.

Further, with respect to the rejection of claims 4 and 8 under Section 103(a), there is no reference in Iyer or Wang that discloses, suggests or motivates combining their respective disclosures to disclose or suggest the Applicant's invention as set forth in amended claims 4 and 8. The Examiner merely hypothesizes as to the combinability of the two references, claiming that it would have been obvious to combine the references, "to obtain a silicide layer of low resistance thereby providing efficient openings of the fuse structure." Iyer discloses silicided polysilicon overlying unsilicided polysilicon in one region of the fuse structure and only polysilicon in another region of the fuse structure. See Iyer's paragraph beginning at line 13 of column 4. Wang discloses tungsten silicide overlying titanium nitride. See Wang's Figure 7. Given these dissimilar materials, it is not seen how the disclosures of Iyer and Wang are combinable. Additionally, there is no disclosure of a material interface in Wang such as the interface 107 in Iyer's Figure 6. Thus it appears the combination of Iyer and Wang is a mere aggregation of references without any disclosure or suggestion in either reference that permits the combination. Given the structural and functional disparities between Iyer and Wang, the only suggestion for selectively combining the references stems from hindsight knowledge derived from the Applicant's invention.

As to rejected claims 6 and 7, the Applicant contends that each of these claims, depending from amended claim 1, includes one or more elements that further distinguish the invention over the art of record. These claims should therefore be in condition for allowance.

The second set of claims, that is, claims 9-12, have been rejected under Section 102(e) as anticipated by Wang (6,703,263).

To further define the invention over the cited prior art, the Applicant has amended independent claim 9 as set forth above in the marked-up version of the claim. In particular, the Applicant has amended the claim to include, "a fuse structure comprising: a first substantially linear material layer having a first sheet resistance; a second material layer coextensive with and overlying the first material layer, the second material layer having a second sheet resistance less than the first sheet resistance" and "wherein the fuse structure is programmable to an opened state in which an opening is formed in the first and the second material layers." Support for this amendment can be found in paragraphs [0030] through [0032] and Figures 2 and 4 of the specification.

Wang discloses at column 3, lines 1 and 2, "blow the fuse by causing the neck portion of the tungsten silicide layer to melt." By contrast, in claim 9 the Applicant claims, "wherein the fuse structure is programmable to an opened state in which an opening is formed in the first and the second material layers."

As to rejected dependent claims 10-12, the Applicant contends that each of these claims, depending from amended claim 1, includes one or more elements that further distinguish the invention over the art of record. These claims should therefore be in condition for allowance.

Within the third claim set, claims 13-15 and 17 have been rejected under Section 102(b) as anticipated by Iyer, claim 18 has been rejected under Section 103(a) as unpatentable over Iyer and claims 16 and 19-21 have been rejected under Section 103(a) over Iyer further in view of Wang.

To further define the invention over the cited prior art, the Applicant has amended independent claim 13 as set forth above in the marked-up version of the claim. In particular, the Applicant has amended the claim to include, "causing current to flow through the second material layer, wherein the current produces heat for opening the first and the second material layers to program the fusible link to an opened state." Support for this change can be found in specification paragraph [0035].

As described above, Iyer does not disclose or fairly the elements of amended claim 13. Instead, Iyer discloses, "When this structure is biased with the negative voltage applied to

cathode 104 and positive voltage to anode 102, the Aelectron wind@ [sic] (as indicated by arrows) will push the silicide molecules, especially in fuse link 106 where the current density is higher. Since cathode 104 is not silicided and includes polysilicon, the silicide in fuse link 106 that is moved towards the anode by the electron wind is not replaced at fuse link-cathode junction and a void is created. In this case, polysilicon is less affected than silicide by electron migration." . . . "Since the silicide has much lower resistivity than the polysilicon, most of the electrons that carry the current will be crowded in the silicide in fuse-link 106 at the junction of the silicide and the un-silicided junction. Advantageously, this current crowding in the vertical direction at a substantially perpendicular interface 107 adds to the crowding due the shape of the large cathode connected to the thin fuse-link, and further amplifies the material migration effect at this junction."

Neither would the Applicant's invention as set forth in claim 13 be considered obvious in view of Iyer, which discloses opening the fuse due to material migration or electromigration, whereas the Applicant claims, "causing current to flow through the second material layer, wherein the current produces heat for opening the first and the second material layers to program the fusible link to an opened state."

As to rejected claims 14-21, the Applicant contends that each of these claims, depending directly or indirectly from amended claim 13, includes one or more elements that further distinguish the invention over the art of record. These claims should therefore be in condition for allowance.

The Applicant has attempted to comply with all of the points raised in the Office Action and it is believed that the remaining claims in the application, i.e., claims 1-21 are now in condition for allowance. In view of the foregoing amendments and discussion, it is requested that the Examiner's claim rejections have been overcome. It is respectfully requested that the Examiner reconsider these rejections and objections and issue a Notice of Allowance for all the claims pending in the application.

The Applicant hereby petitions for an extension of time of one month until March 18, 2005 under the provisions of 37 C.F.R. 1.136. A check in the amount of the $120 extension fee is enclosed.

If a telephone conference will assist in clarifying or expediting this Amendment or the claim changes made herein, the Examiner is invited to contact the undersigned at the telephone number below.

Respectfully submitted,

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CERTIFICATE OF MAILING

I HEREBY CERTIFY that this Amendment is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Mail Stop Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 18th day of March, 2005.

John L. DeAngelis, Jr.